



Just the Facts...

Chagas Disease



Chagas disease, also referred to as American Trypanosomiasis, is a parasitic disease that affects millions of people in Mexico, and Central and South America. It is caused by the flagellate protozoan parasite *Trypanosoma cruzi*. The parasite causes both acute and chronic symptoms which can be life-threatening. Chagas disease is transmitted to animals and people through the infected feces of blood-sucking triatomine insects (a.k.a. “kissing bugs”). Humans can become ill when infected insect feces are rubbed into breaks in the skin, mucous membranes, or the eyes or mouth; when liquids or uncooked food contaminated with feces are consumed; by congenital transmission; or through transfusions/transplants with infected blood/organs. A high risk scenario for contracting Chagas disease would be sleeping in dwellings made from mud, adobe, and palm thatch; these are inviting habitats for “domesticated” triatomine insects. Preventive measures include spraying infested dwellings with residual insecticides and sleeping under insecticide-treated bed nets. Once a rural problem, Chagas disease has expanded into urban areas. An emerging serious risk factor is transfused blood; the level of *T. cruzi* contamination in blood stocks in Central and South America exceeds that of AIDS or hepatitis.

Distribution.

Chagas disease is a public health threat in Mexico, and Central and South America. Vector-borne transmission of *T. cruzi* occurs in regions shaded in red, mainly in rural areas.



Q. What is Chagas disease and where is it found?

A. Chagas (pronounced SHA-gus) disease, also referred to as American Trypanosomiasis, is a parasitic disease that affects roughly 9 million people in Mexico, and Central and South America. It is named after Dr. Carlos Chagas, a Brazilian physician who first described the disease in 1909. It is caused by the flagellate protozoan parasite, *Trypanosoma cruzi*. It is transmitted (vectored) to humans and other mammals by triatomine insects (Order: Hemiptera, Family: Reduviidae, Subfamily: Triatominae). These insects are known by numerous common names, varying by country, including “kissing bug”, “benchuca”, “vinchuca”, “chipo”, and “barbeiro”. Other forms of transmission are possible, such as ingestion of food contaminated with these parasites, blood transfusion, organ transplants, and from mother to child in the womb.

Q. Who is at risk of getting Chagas disease?

A. Chagas disease is a problem in the Americas from latitude 42° N to latitude 46° S (extreme southern United States to northern Argentina). A significant percentage of the Central and South American population is at risk of acquiring the disease. Chagas disease kills approximately 50,000 people each year. The demographics of this disease are changing. In the past, the majority of cases occurred in rural areas, affecting humans living in huts covered by grass or palm leaves and constructed with mud and adobe. In these situations, the human population lived side by side with the triatomine insect vectors of Chagas disease. Recently, however, blood transfusion has become a significant route of transmission. Human migrations from rural areas to urban centers and immigration to nonendemic countries have increased the risk of transfusion-acquired Chagas disease in all of the Americas. The level of *T. cruzi* contamination in blood stocks in Central and South America exceeds that of AIDS or hepatitis.



Chagas Disease Transmission. Humans are infected in a variety of ways. Triatomine insects pass *T. cruzi* parasites in their feces. These insects feed on human blood, then defecate on their victims. Parasites enter the human body when the feces are rubbed into the bite wound, eyes, or mouth. People can also become infected by drinking juices or eating food contaminated with feces from infected bugs, congenital transmission (from mother to child in the womb), transfusions with contaminated blood, and transplantation with infected organs.

Q. How do you get Chagas disease?

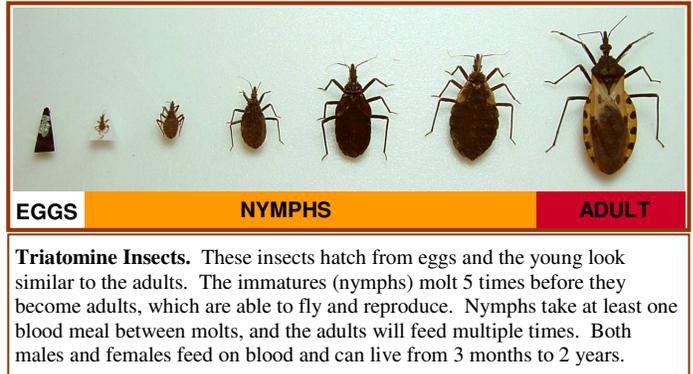
A. The most common method of contracting Chagas disease is from the infected feces of triatomine insects. People can acquire Chagas disease when parasites in the feces of infected triatomine insects enter the human body. Infection occurs when feces are rubbed into insect bite wounds, the eyes, or the mouth. Humans also acquire the parasites by eating uncooked food or drinking beverages contaminated with infected feces from triatomine insects. Pregnant mothers who are infected have been known to pass the parasites onto their baby (congenital transmission). *T. cruzi* can also be transmitted from donors to recipients of blood transfusions and organ transplants.

Q. How do triatomine insects become infected with *T. cruzi*?

A. These insects become infected when they feed on the blood of animals that serve as reservoirs for the *T. cruzi* parasites. Over 150 wild and domestic animal species including humans, dogs, cats, rats, mice, opossums, armadillos and bats are known reservoirs. In the United States, infected triatomine insects and reservoir hosts have been found from Texas to Florida and as far north as Oklahoma and Maryland.

Q. How do triatomine insects transmit *T. cruzi*?

A. Triatomine insects feed on blood, but the disease is not transmitted by the bite of these insects. The mouthparts of both the immature stages (nymphs) and adults are modified like sharp straws, made for piercing skin and sucking blood. Species that have adapted to living in human dwellings are called “domesticated” triatomines. During the daylight hours, these insects hide in cracks and crevices in floors, walls, house plants, furniture and up within the ceiling rafters of a structure. When night falls, the insects emerge from these areas crawling or fluttering across the room in search of a blood meal. When they find a host, the insects search the body for areas where the skin is thin and easy to puncture, often around the mouth and eyes. The bite from a triatomine insect is initially painless. Most people don’t realize that they have been bitten. However, the bite site soon becomes an itchy welt. As the insects feed they defecate, leaving fecal droppings contaminated with the *T. cruzi* parasites on the surface of the skin around the bite wound. The parasites can then enter the blood when the victim scratches or rubs the feces into the bite wound, breaks in the skin, or into the eyes and mouth.



Q. What are the symptoms of Chagas disease and how are they treated?

A. In humans, there are short-term (acute) and long-term (chronic) effects of Chagas disease. Within one month after infection, acute symptoms may be experienced. There may be an inflamed swelling or chagoma (called Romaña’s sign when swelling involves the eyelids) at the site of entry of the parasites. In some cases, the acute stage of infection may pass unnoticed. However, in some cases (< 5%) death may result from acute heart failure or inflammation of the brain or spinal cord (meningoencephalitis), usually in children less than two years old. Medication for Chagas disease is usually only effective when given during the acute stage of infection. The drugs of choice are azole- or nitro-derivatives. Chronic symptoms may not occur for years or even decades after the initial infection. Symptoms include enlargement of the heart muscle, nervous system disorders, and dementia. The colon and esophagus can also be affected, leading to severe constipation and problems with swallowing. There are no effective medications for Chagas disease in the chronic stage of infection. Standard treatment methods are used to manage symptoms only. Death may result from damage to heart tissue.

Q. What do I do if I think I have been bitten by a triatomine insect and/or I may have contracted Chagas disease?

A. Contact your local preventive medicine personnel or your primary care physician about getting a blood test. In some cases, the symptoms of the acute stage may not appear and the chronic stage may not be diagnosed until a blood test determines that *T. cruzi* parasites are present in the blood.



High Risk Habitats and Preventive Measures. Triatomine insects which transmit Chagas disease are found in houses made from materials such as mud, adobe, and palm thatch. Preventive measures include spraying infested dwellings with residual insecticides and using insecticide-treated bed nets.

Q. What can I do to prevent myself from getting Chagas disease?

A. If you travel to Mexico, or Central or South America, sleep indoors in well-constructed facilities (air-conditioned or screened hotel rooms). Avoid structures and areas that may be harboring triatomine insects. Remember that poorly constructed housing and structures utilizing mud, adobe or palm thatch construction are prime habitats for triatomine insects. Preventive measures include spraying infested dwellings with residual-action insecticides, and sleeping under insecticide-

treated bed nets. In addition, travelers should be aware of other possible routes of transmission, including blood-borne (transfusions) and food-borne (contaminated drinks and uncooked food).

References:

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